

# GPU use in VAST (current and future)

John Clyne

# VAPOR Project



What: VAPOR visualization application for geoscience data

- Platform portable (Mac OSX, Linux, Windows), runs on desktop/laptop
- 3D graphics rendering performed via OpenGL API (port Vulkan in future?)
- Computationally-intensive, non-rendering algorithms implemented on CPU
  - E.g. Trajectory integration, decompression, etc.

Language: C++

Status: Just thinking about possibilities (wrt GPU ports of non-rendering code)

Where we could use help?

- Guidance on porting computationally-intensive vis. Algorithms to GPUs
  - OpenACC vs CUDA vs OpenMP vs Other?

# GeoCAT Project

What: A growing collection of geoscience analysis functions with Python language bindings

- The NCL pivot to Python
- Currently using Dask for threaded parallelization
- Runs on MacOSX/Linux currently, possibly adding Windows in the future

Language: Fortran, Python, and some C

Status: just thinking about possibilities

Where we could use help?

- Guidance on porting
  - OpenACC vs CUDA vs OpenMP for compiled language implementations
  - CuPy vs Dask-GPU for pure-Python code?